

## REMARKS

Claims 1 - 4 and 9 - 13 remain active in this application. Claims 5 - 8 have previously been canceled. Claims 1 and 9 have been amended to more fully define the environment of the invention. Support for the amendments of the claims is found throughout the application, particularly in Figure 1 and the description thereof on pages 19 and 20. No new matter has been introduced into the application.

Claims 1, 3, 9, 11 and 13 have again been rejected under 35 U.S.C. §103 as being unpatentable over the admitted prior art in view of Kitahiro and claims 2, 4, 10 and 12 have again been rejected over the same combination of prior art in view of the further teachings of Gaynes et al.; the Examiner suggesting that use of a metal layer in the print head in accordance with Kitahiro in the admitted prior art would be obvious to allow the substrate to be thinner and citing Gaynes for teaching the use of Nickel. These grounds of rejection are respectfully traversed for the reasons of record in the previous response and the further remarks presented below.

In this regard, the remarks previously presented argue that the basic purposes of a print head and Kitahiro are very different to a degree that Kitahiro must be considered to be non-analogous; that the principles by which the invention and Kitahiro achieve their respective meritorious functions are very different such that no expectation of success in achieving the meritorious effects of the invention is provided by Kitahiro; and that modification of the admitted prior art in accordance with Kitahiro would render both the admitted prior art and Kitahiro unsuitable for their respective intended purposes and thus the proposed modification would be improper under the well-accepted precedent of *In re Gordon*, 221 USPQ

1125 (Fed. Circ., 1984) such that no *prima facie* demonstration of obviousness had been or could be made and, further, that the finality of the action was premature for that reason. The Advisory Action of June 16, 2003, indicated that the previously presented remarks were found to be non-persuasive to overcome the rejections but stated no reason for so holding. By the above amendment, the structures of the print head which give rise to the problem solved by the invention are more fully set out in independent claims 1 and 9 to emphasize the differences in function and principles of operation of a print head and the smart card structure of Kitahiro as well as the impropriety of the suggestion of modification of the admitted prior art in the manner suggested by Kitahiro under *In re Gordon*, *supra*.

Specifically, an inkjet print head must necessarily have a relatively thick substrate to be substantially rigid and must have ink flow passages including a common ink flow passage formed in and extending through the substrate at locations generally corresponding to an array of inkjet orifices which extend substantially across the print head and substrate. The removal of material to form these ink flow passages tend to concentrate any mechanical (e.g. bending) forces applied to the print head and thus can nucleate cracking during manufacture, reducing manufacturing yield. The invention provides a metal film in a part of one side of the head body which substantially prevents such cracking or propagation of any cracks which may be thus nucleated without interference with the formation of the common ink flow passage which prevents the metal film from extending across the locations of the substrate where forces would be concentrated.

In contrast, the basic thrust of Kitahiro is to form a substrate which is sufficiently thin to be

flexible for inclusion in a smart card of a thickness comparable to currently used credit cards. This requires an even thinner substrate of a thickness such that even the residual forces from integrated circuit formation are sufficient to cause curling and damage to the integrated circuits and susceptibility to breakage along cleavage planes of the monocrystalline substrate. To achieve such a thin and flexible substrate, Kitahiro applies a retaining plate 22 to substrate 21, the substrate is polished or ground to a thickness corresponding to the strength of a reinforcing layer 4 (see page 4, lines 23 - 29 of the translation) which is applied and the retaining plate 22 is then removed. As indicated in the sentence bridging pages 4 and 5 of the translation of Kitahiro, breakage is prevented by the random crystal or grain orientation of the reinforcing layer which only rarely (if at all) coincides with a cleavage plane of the monocrystalline substrate which the grains otherwise bridge. Metal appears to be preferred only to the extent that, if applied by plating techniques, no bonding is otherwise required.

Thus the functions of the invention and the structure of Kitahiro are grossly different in that the print head of the invention must be rigid (and thus unsuitable for a smart card) and must have a substrate of sufficient thickness to accommodate a plurality of ink ejection units, a plurality of individual ink flow paths and a common ink flow path which also present crack nucleation sites while the substrate 22 and reinforcing layer 4 of Kitahiro must, together, be sufficiently thin to be flexible and thus unsuitable for a print head. (If the substrate were thicker, the problem of breakage along cleavage planes would be much reduced or negligible and there would be no need for a thin reinforcing layer in the nature of a film, as claimed, which would then not be related by relative strength to the substrate thickness as disclosed by

Kitahiro.) Kitahiro does not present or, at least, does not consider any structures on or in the substrate which tend to concentrate forces applied to the substrate and provides reinforcement by bridging points of weakness of the material itself as opposed to force-concentrating structures which inherently cannot be bridged by a reinforcing film consistent with the formation and function of such structures.

Therefore, it is respectfully submitted that the inkjet print head of the admitted prior art and the structure of Kitahiro are non-analogous in purpose, intended function and principle of operation and are thus not properly combinable to answer the recitations of the claims or, taken together, do not lead to an expectation of success in preventing cracking of a thick substrate where forces are necessarily concentrated by the provision of a metal film at locations other than where the forces are concentrated and where the metal film cannot be placed consistent with the necessary function of those structures and thus do not provide evidence of a level of ordinary skill in the art which would support the conclusion of obviousness which the Examiner has asserted. Moreover, if the print head of the admitted prior art were to be modified in the manner of Kitahiro, as suggested by the Examiner, both the print head of the admitted prior art and the flexible circuit of Kitahiro would be rendered unsuitable for their intended purpose and would not function in the respective manners intended and thus there can be no motivation for the modification. (In this regard, it is respectfully pointed out that the Examiner *assumes* a desirability for the print head to be made thinner as motivation for the combination, which is clearly an incorrect assumption, as previously pointed out, by reason of the need for the print head to be rigid and to accommodate various structures and ink passages as now recited in the claims.) Therefore

the suggested modification of the admitted prior art is improper under the rule of *In re Gordon, supra*. These deficiencies to answer recitations of the claims of the basic combination of teachings of the admitted prior art and Kitahiro are not remedied by the inclusion of the teachings of Gaynes et al. as previously discussed.

In view of the foregoing and the explicit recitation in the claims of the environment of the invention which give rise to the problem solved by the invention, in particular, it is clear that the grounds of rejection of record are clearly in error and untenable. The admitted prior art and Kitahiro and/or Gaynes et al. do not support a *prima facie* demonstration of obviousness of any claim in the application and no such *prim facie* demonstration of obviousness has been or can be made by the Examiner. While moot in view of the concurrently filed Request for Continued Examination, it is again respectfully submitted that the finality of the previous office action is premature for that reason. Accordingly, it is respectfully requested that the stated grounds of rejection be reconsidered in view of the above amendment and remarks and previously submitted remarks and withdrawn.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

A petition for a one-month extension of time has been made above. If any further extension of time is required for this response to be considered as being

timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



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